Message

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Subject: STICS: Clearance Initiation: #ORD-014015: Advancing the State-of-the-Science in Estimating Cancer Risk of Polycyclic Aromatic Hydrocarbon Mixtures

This e-mail is to inform you that you have been copied on the following Human Health Risk Assessment clearance submission in STICS:

- **Product type, subtype:** Presentations and Technical Summaries, Abstract
- **Product title:** Advancing the State-of-the-Science in Estimating Cancer Risk of Polycyclic Aromatic Hydrocarbon Mixtures
- **Author(s):** Pratt , M,H. Carlson-Lynch,L. Flowers ,M. Gehlhaus ,P. McClure,J. Melia,G. Rice ,L. Teuschler and K. Hogan
- **Initiator:** Margaret Pratt,ord/ncea/iris
- **ORD Tracking Number:** Tracking # ORD-014015
- **Product Description / Abstract:** Cancer risk assessment for environmental exposures to polycyclic aromatic hydrocarbons (PAHs) poses particular challenges because toxicity data on mixtures of concern are extremely limited. EPA's Science Advisory Board (SAB) stated that a relative potency factor (RPF) approach that scales the doses of component PAHs to an index chemical, i.e., benzo[a]pyrene (BaP), remains the best practical approach. A high degree of uncertainty is associated with using this approach for decision-making, as RPFs are only available for a small number of carcinogenic PAHs. Despite the extensive database, the body of literature found suitable for estimating cancer risk is limited. Following SAB recommendations, EPA's IRIS Program has advanced the state-of the-science for developing RPFs through a systematic review of the literature reporting tumor data on individual PAHs, focusing on studies with environmentally relevant routes of exposure and tumor responses $\leq 90\%$. Studies not meeting these criteria, or conducted without BaP for comparison, are common. Novel approaches, which permit use of additional studies of high quality for estimating RPFs, include using earlier time points when available, and using concurrently tested PAHs as intermediate index chemicals when BaP was not tested. Characterization of uncertainty in the development of RPFs is an important feature of the evaluation and includes quantification of variability across studies for individual PAHs and sensitivity analyses to evaluate the impact of data choices (e.g., incidence vs multiplicity) and modeling strategies. There is a critical need for data that are better suited for the estimation of cancer risk from exposure to PAHs, both for the more practical RPF approach in the near term and, ultimately, for whole PAH mixtures. (The views expressed are those of the authors and do not necessarily reflect the views or policies of the U.S. EPA).
- **Tracking and Planning**
  - Task: Scientific Issues and Challenges Workshops
  - Product:
  - Project: Advancing Dose-Response Analysis
  - Science Question: How can ORD better meet the needs of decision makers by modernizing risk assessment to incorporate recent scientific innovations, including molecular biology and computational sciences?
  - Topic:

- Theme: Modernizing Risk Assessment Methods
- Research Program Area: Human Health Risk Assessment

- **HISA? ISI? High Profile?:** Not Applicable
- **QA form attached in STICS?:** Not Applicable
- **QAPP Reference:** N/A
- **Keywords:**
  - mixtures cancer risk assessment
  - polycyclic aromatic hydrocarbons
  - characterizing uncertainty and variability
  - cumulative risk assessment

- **Meeting Information:**
  - Meeting Name: Society of Toxicology Annual Meeting
  - Meeting Start Date: 03/13/2016
  - Meeting End Date: 03/17/2016

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